THE SUBMILLIMETER-WAVE SPECTRUM OF TRANS- AND CIS-CROTONONITRILE ($CH_3CH{=}CHCN$)

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The ground state rotational spectrum and ground state rotational torsional spectrum of trans- and cis-crotononitrile are further characterized in the 270-480 GHz frequency range. The A-E splittings due to methyl internal rotation in trans-crotononitrile[a] are not observed in the sub-millimeter spectrum which has been assigned and fit to a semi-rigid rotor Hamiltonian in agreement with previous work[b]. For cis-crotononitrile over 380 transitions are now assigned to this conformation, twice the number previously reported. Internal rotation splittings are observed throughout the ${}^aR-$branches and have been assigned for $J > 30$. The A-E spectrum fits reasonably well in an internal axis system, but strong correlation between D_{ab} and the rotational constants indicates that a rotated internal axis system may suit the data better.

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[a]M. Suzuki and K. Kozima, *J. Mol. Spec.* **33**, 407-413 (1970); S. L. Hsu and W. H. Flygare, *J. Mol. Spec.* **37**, 92-99 (1971).

[b]A.G. Lesarri, J. Cosleou, X. Li, G. Wlodarczak and J. Demaison, *J. Mol. Spec.* **172**, 520-535 (1995).